2017

Community Rain Gardens: Rainscaping Group Project Report

University of Northern Iowa. Center for Energy & Environmental Education.

Rainscaping Group Project

May-August

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A rain garden is a depression created in a landscape that allows water runoff from rooftops, driveways, and/or streets to pool or be ponded. The water does not stay, it only captures this runoff and allows it to infiltrate into the ground recharging groundwater instead of running off into our sewer systems and in turn into our rivers and streams. Rain gardens are an infiltration-based storm water treatment management system. The idea here is to add beauty in the landscaping of these rain gardens while also treating home's rooftop and driveway runoff, which allows them to be both aesthetically pleasing and a hydraulically pleasing system.

When Sara, Nick and I first started on this project the first step was simply to communicate with Josh and gather potential clients that would be interested in installing a rain garden in their yard. Once this step was complete and we found a interested resident we would go and asses their yard and scout out the best location for the rain garden usually where downspouts could be attached to the potential rain garden. Once a location was decided the next step was to conduct a percolation test (See attachment 1). We would then calculate the size of rain garden needed to "treat" the total square feet being drained into that particular downspout. Once dimensions were established exact location, shape, plant type and placement, and extent of landscaping materials were determined in conjunction with the homeowner.

Once details were sorted out a layout plan and supply list with cost was designed and laid out (See attachment 2 and 3). Once the rain garden is complete a check list is completed (See attachment 4).

The homeowner signs a maintenance contract which holds them liable for the upkeep of the raingarden once it is installed. This contract is with the Dry Run Creek Board basically agreeing to maintain their rain garden once we have finished installing it, the contact exists and this project exists because DRC is working towards better water quality of the creek and rain gardens are a way for this to happen. So DRC splits the cost of the rain garden with the home owner since it is in turn improving the creeks water quality, decreasing runoff from urban areas, and improving groundwater recharge rates.

ATTACHMENT 1

Perc Test & Rates

Step 1: Call Iowa One Call

Step 2: Dig hole 36 inches deep

Step 3: Fill hole with 12 inches of water and track time until water is gone

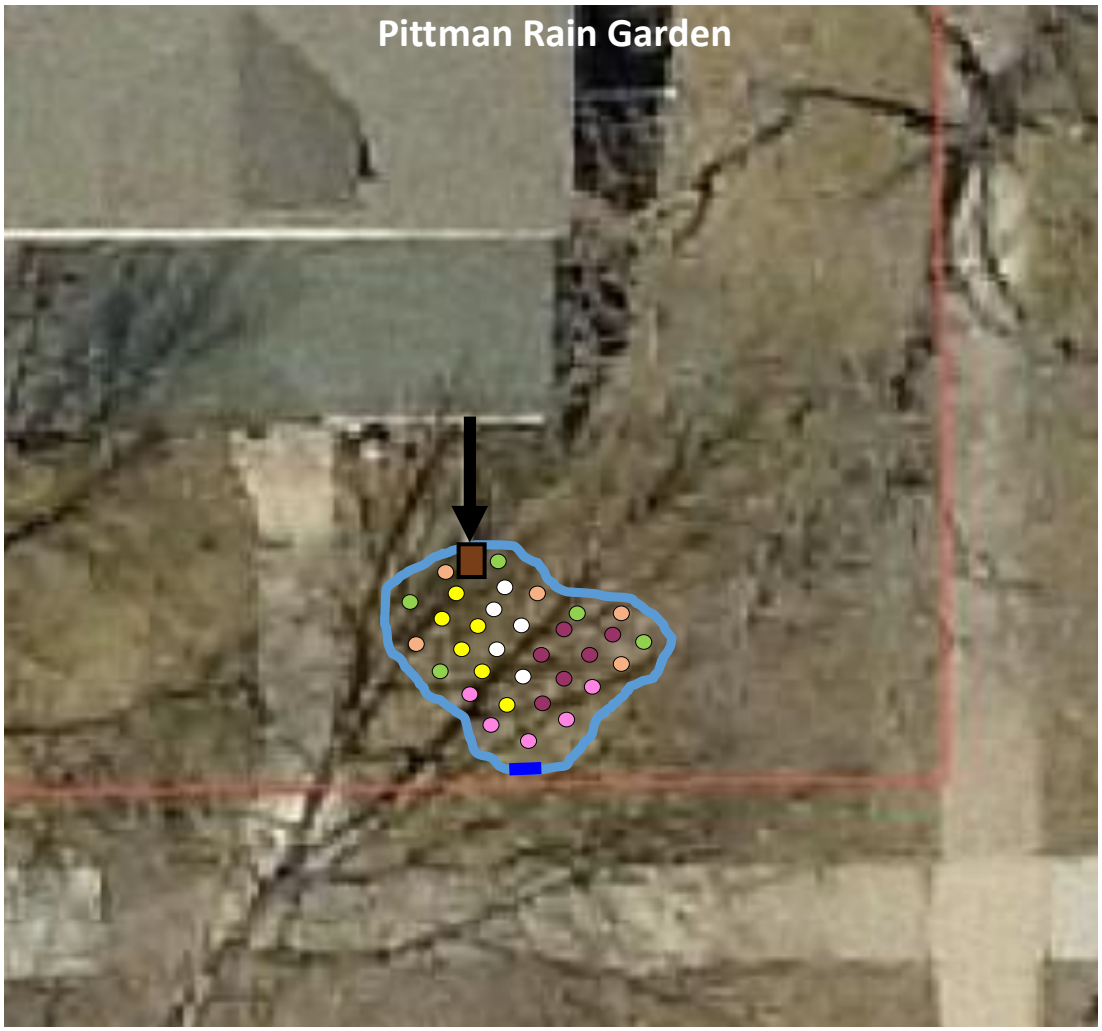
Step 4: Repeat after 24 hours to determine the percolation rate in inches per hour.

If 12 inches of water is gone in 12 hours percolation rate is about 1 inch per hour.

If 12 inches of water is gone in 24 hours percolation rate is about 0.5 inches per hour

If water does not drain away in 24 hours a enhanced rain garden or bio retention cell must be used

ATTACHMENT 2



Legend

Plants

- Prairie Dropseed
- Little Bluestem
- Prairie Smoke
- Prairie Coreopsis
- Turtlehead
- Purple Prairie Clover

Materials

- Buried tile
- Berm notch
- Flagstone
- Rock border

ATTACHMENT 3 (1 of 3)

Pittman Rain Garden

Notes & Steps

1. Excavate rain garden

a. Based on the spray paint markings, excavate out the rain garden by digging 8 inches down. Try to avoid standing in the rain garden while it is being excavated to avoid compacting the soil.

b. It is very important for the rain garden to be level from side to side and front to back. Use the 2x4 board and level to ensure that the interior is level.

c. Pile excess soil on sidewalk/tarp to make cleanup easier.

2. Place rock edging around perimeter of rain garden a. When adding rock edging, excavate around the perimeter of the rain garden down to an appropriate depth for the rock height. b. Be sure to leave sufficient space for the inlet to the rain garden from the downspouts.

3. Building up rain garden berm and including a notch.

a. The southern border of the rain garden will need to have a berm slightly built up as this is lower in elevation from the inlets to the rain garden. Use some of the excavated soil to serve as the berm. The walls/berm of the rain garden will also need to be level. This is to ensure that the rain garden ponds the stormwater so that it can infiltrate.

b. There will be one corner of the rain garden that will serve as an overflow for excessive rain fall events. This will be accomplished with a notch in the berm. This area will be approximately 6 inches wide and will lie 1 inch lower than the rest of the rain garden berm. Please refer to the diagram for location.

4. Extend downspout.

a. The downspout on the east side of the house will need an extension to connect to the rain garden. This will involve cutting the existing downspout several feet above ground level to allow for a slope to the rain garden. An elbow will be utilized to redirect the downspout to the south. Utilizing the downspout extensions and the connector should provide sufficient length to connect to the rain garden. Excess material can be cut away.

ATTACHMENT 3 (2 of 3)

b. The downspout extension will need to be secured to the house via fasteners.

5. Rock chute to rain garden. a. The downspout extension will drain in to a rock chute that is connect to the rain garden. b. Excavate out a path for the chute along the paint lines a couple inches down. The goal is for a gradual slope to the rain garden. c. Once the area is excavated, lay down the rock chute bases in tandem. Taping these together will ensure that water doesn't seep underneath. Together these will help control soil erosion on the sides and base of the chute. d. Then fill in the chute with a couple inches of rock. Where the chute connects with the rain garden, place a couple flagstones on top of each other with a smaller one on top of a larger one. This will serve as a stair step for the water to disperse out to the rain and avoid washing out the mulch.

6. Fill in the entire rain garden evenly with approximately 2 inches of mulch.

7. Plant the native plants in the rain garden

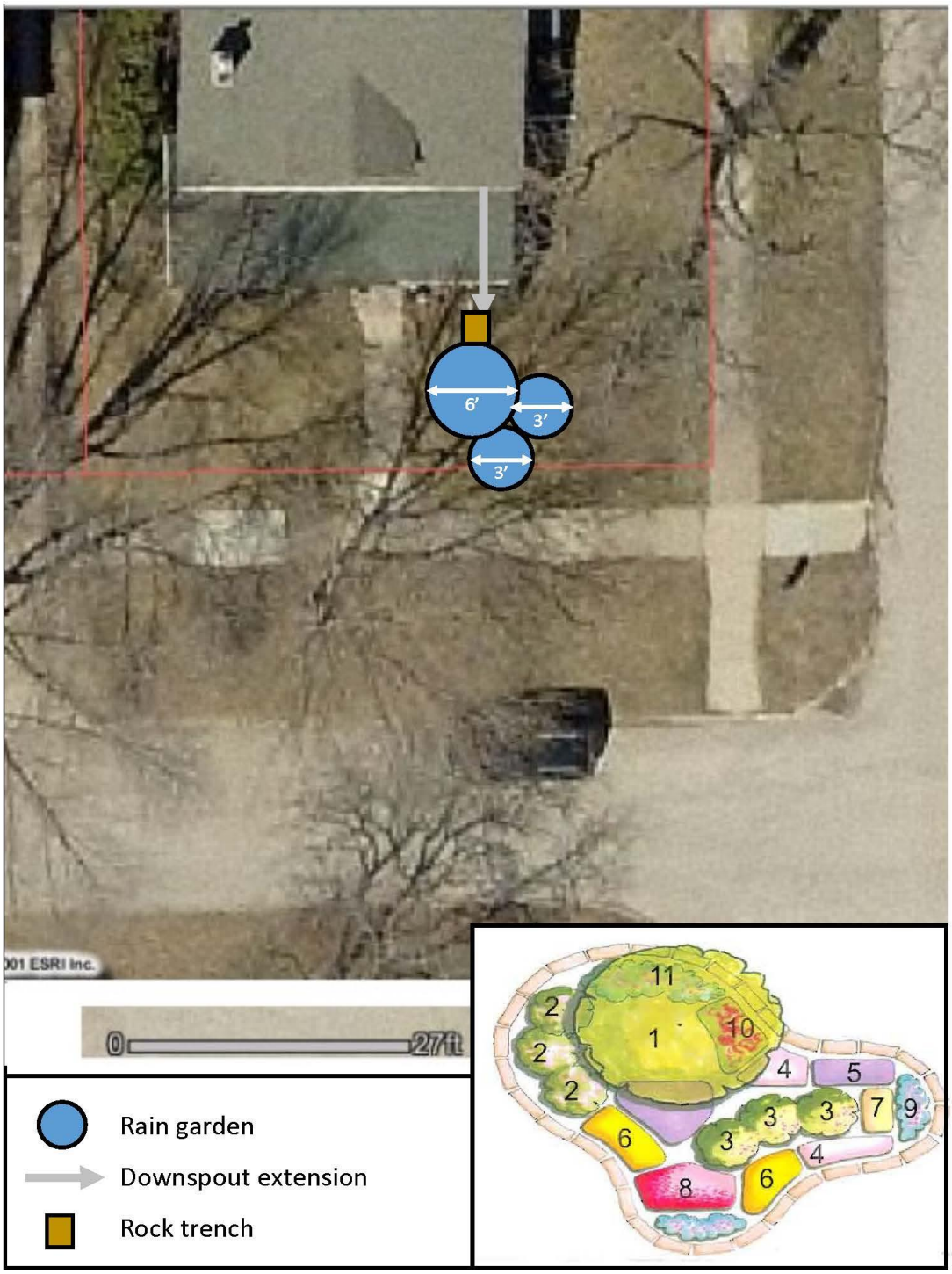
a. Reference the design sheet for plant layout (on back). This layout allows the short plants up front, and tall ones in back. Plants should be approximately 1 foot apart from each other.

b. Before any digging and planting is done, lay the plants out on top of the mulch in the intended areas to ensure an even spacing and good looking layout.

c. After plants are laid out, brush aside mulch and then use trowels or other small tool to dig out hole for plants.

8. RAIN GARDEN IS NOW COMPLETE!!!

ATTACHMENT 3 (3 of 3)



ATTACHMENT 4

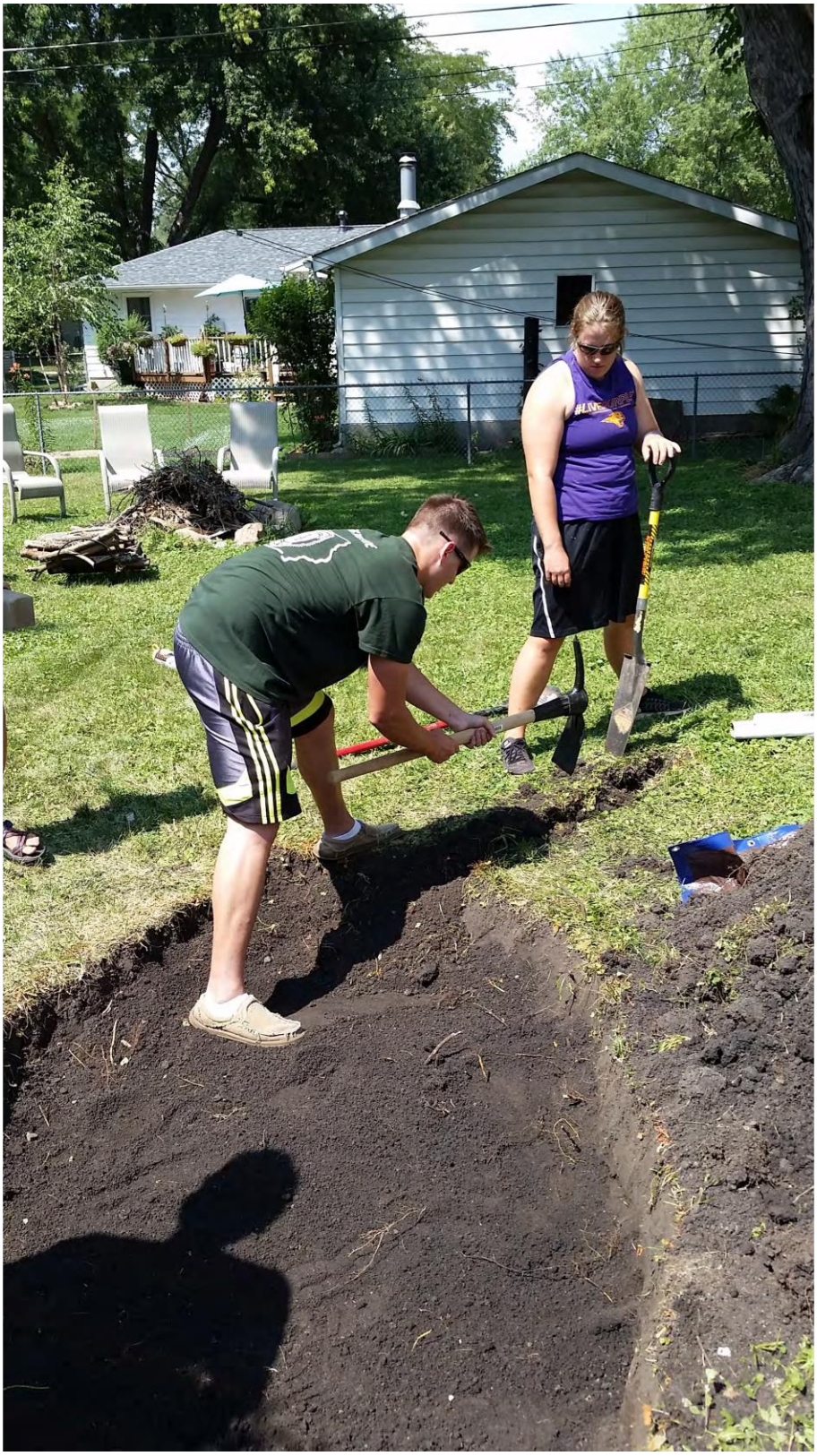
Rain Gardens Design Review Check List

April 2015

Applicant: _X_____ Date: _____5/31/2017_____

Submitted By: ___Josh Balk_____ Project Location: __X Waterloo_____

1) Drainage Area (DA)_____375_____SF
2) How much of the DA is Impervious Surface ____100___% and _____375_____SF (if soil quality restoration is done or if soils investigations indicate green space is capable of absorbing the WQv the green space can be eliminated from the DA for WQv calculation. If neither applies, assume ½ of the green space is equivalent to impervious surface.)
3) Has Soil Quality Restoration been done on the green space in the DA? ____Yes __X___ No
4) If not, what was the size of the DA used to size the Rain Garden _____375_____SF
5) Discuss soils investigation findings (i.e. soil type, texture, structure, depth to water table, etc)_____soil percolation test found 6"/hour water infiltration rate. Soil texture was found to be sandy loam with a good organic content _____
_____
6) Percolation rate___6_____ inches/hour
7) Ponding Depth _____6_____ inches
8) Factor used for sizing the rain garden ___0.10_____ (from page 8 of the RG Manual).
9) Surface Area of the Rain Garden _____42_____SF
10) Describe any pretreatment techniques provided (what practice(s) were used, how were things sized, etc) _____None_____
_____
11) Does the Rain Garden have amended soil? _____Yes ___X__No
12) If yes, describe the depth and type of amendments:
    a. ___N/A_____inches of sand
    b. ____ N/A _____inches of topsoil
    c. ____ N/A _____ inches of compost
13) Quantities (please attach a copy of materials calculations):
    a. sand ___ N/A _____tons;
    b. compost ___ N/A _____ tons or CY
    c. shredded hardwood mulch ____ N/A _____CF or _____ CY
14) Describe overflow (i.e. stand pipe, notch in berm, etc.)_____Notch in berm_____
_____
_____
15) Spacing of plants _____1'_____
16) Size of plants _____3"_____
17) Quantity of plants _____32_____ (Please attach a plant list and planting plan)
18) If seeding was done describe type and quantity of seed used and the rate that was applied (i.e lbs/ac or per 1,000 SF _____N/A_____

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